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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/032,419	12/21/2001	John E. Hudson	584-1048	5736

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EXAMINER
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TORRES, JUAN A

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 01/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/032,419	HUDSON ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Juan A. Torres	2631	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 December 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 9, 12 and 27-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9, 12 and 27-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/27/2005 has been entered.

### ***Claim Objections***

In view of the amendment filed on 11/14/2005, the Examiner withdraws claim objections of the previous Office Action.

### ***Response to Arguments***

Applicant's arguments filed on 11/14/2005 have been fully considered but they are not persuasive.

#### **Regarding claims 9, 27 and 29:**

The Applicant contends, "Ishio does not disclose the step of "repeating the normalising and QPSK decoding steps for progressively smaller assumed amplitude level; to demodulate each said further data stream" as claimed in the independent claims. Rather, Ishio discloses in the second embodiment that to demodulate the 64-ary APK signal the "four-phase modulated signals regenerated by the re-modulation circuits 21 and 29 are combined, the 16-ary APK signal shown in Figure 4 is derived. When the 64-ary APK signal... is subtracted vectorially from the regenerated 16-ary

APK signal in the subtractor... the 4-PSK signal is obtained/ (Column 4 lines 64 to 67) (emphasis added). It would therefore be clear to one skilled in the art that to decode all the data present in the 64-ary APK signal the 16 APSK signal needs to be regenerated. In contrast, in the present invention, the 16-ary APK signal is not regenerated, rather successive normalisation and demodulation steps allow decoding of all the data streams contained within the signal without requiring regeneration of any part of the signal".

The Examiner disagrees and asserts, that, as indicated in the previous Office action, Ishio discloses a QPSK signal at a first assumed amplitude level, normalizing the remaining signal by subtracting the decoded phase position of the demodulated first QPSK data word from the received signal and repeating the QPSK decoding and normalizing steps for progressively smaller assumed amplitude levels to demodulate each said further data stream (figures 1-5 column 4 lines 1-52).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "without requiring regeneration of any part of the signal") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

The Applicant contends, "one skilled in the art would not have any incentive to combine the teachings of any of the combinations of references because he would consider the problem as being solved by embodiment 3 of Ishio".

The Examiner disagrees and asserts, that, as indicated in the previous Office action, in response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the suggestion/motivation for doing so would have been to provide a digital carrier signal demodulation circuit simple in construction yet capable of increasing the information transmission rate (Ishio column 1 lines 65-68).

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

For these reasons and the reasons indicated in the previous Office Action the rejections of claims 9, 27 and 29 are maintained.

Regarding claims 12 and 28:

The Applicant contends, "Applicants further submit that Claims 12 and 28 would not have been obvious at least by virtue of their dependencies".

The Examiner disagrees and asserts, that, as indicated in the previous Office action, because the rejection of claim 9, 27 and 29 are maintained, the rejections of claims 12 and 28 are also maintained.

For these reasons and the reasons indicated in the previous Office Action the rejections of claims 12 and 28 are maintained.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 27-29 are rejected as failing to define the invention in the manner required by 35 U.S.C. 112, second paragraph.

The claim(s) are narrative in form and replete with indefinite and functional or operational language. The structure, which goes to make up the device, must be clearly and positively specified. The structure must be organized and correlated in such a manner as to present a complete operative device.

As per claim 27, claim 27 is rejected because it is an apparatus claims, but it doesn't define any structure. MPEP in section 2114 states that "[A]pparatus claims cover what a device *is*, not what a device *does*." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original)". And also that "While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997)".

As per claim 28, claim 28 is rejected because it depends from claim 27.

As per claim 29, claim 29 is rejected because it is a hybrid claim. The preamble of claim 29 is an apparatus claim (a network), but all the limitations of the claims are directed to a process.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9, 12, 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over IEEE 802.11a standard (Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications, High-speed Physical Layer in the 5 GHz Band, 1999) in view of Ishio (US 4039961).

As per claims 9, the IEEE802.11a discloses a method of receiving data over a communications network which carries a signal comprising a plurality of data streams modulated using quadrature amplitude modulation at different respective modulation levels the data stream's modulation level selected according to the carrier to noise ratio of the intended receiver comprising (a) the plurality of receivers receiving the signal over the network (section 5.2 page 10 802.11, section 17 pages 3-45, section 17.3.8.1 page 24 table 86), and (b) each receiver demodulating a QPSK signal at a first assumed amplitude level from the signal (section 17 pages 3-45, section 17.3.8.1 page 24 figure 118), and (c) attempting to demodulate at least one further data stream from the signal;

(section 17 pages 3-45, section 17.3.8.1 page 24 figure 118); the data streams demodulated by each receiver being determined according to the receiver's signal to noise ratio (section 17.2, table 78 and 91). IEEE802.11a doesn't disclose normalizing the remaining signal by subtracting the decoded phase position of the demodulated first QPSK data word from the received signal and repeating the QPSK decoding; and repeating the normalizing and QPSK decoding steps for progressively smaller assumed amplitude levels to demodulate each said further data stream. Ishio discloses normalizing the remaining signal by subtracting the decoded phase position of the demodulated first QPSK data word from the received signal and repeating the QPSK decoding; and repeating the normalizing and QPSK decoding steps for progressively smaller assumed amplitude levels to demodulate each said further data stream (figures 1-5 column 4 lines 1-52). IEEE802.11a and Ishio are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine in the receiving circuit disclosed by IEEE802.11a with the layered modulation disclosed by Ishio. The suggestion/motivation for doing so would have been to provide a digital carrier signal demodulation circuit simple in construction yet capable of increasing the information transmission rate (Ishio column 1 lines 65-68). Therefore, it would have been obvious to combine IEEE802.11a with Ishio to obtain the invention as specified in claim 9.

As per claim 12, the IEEE802.11a discloses sending an acknowledgement for each data portion of a data stream, which is successfully received and demodulated (section 9 pages 70-97 IEEE802.11). ). IEEE802.11a and Ishio are analogous art



because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine in the receiving circuit disclosed by IEEE802.11a with the layered modulation disclosed by Ishio. The suggestion/motivation for doing so would have been to provide a digital carrier signal demodulation circuit simple in construction yet capable of increasing the information transmission rate (Ishio column 1 lines 65-68). Therefore, it would have been obvious to combine IEEE802.11a with Ishio to obtain the invention as specified in claim 12.

As per claim 27, the IEEE802.11a discloses a plurality of receivers each including a demodulator arranged to demodulate a signal having a plurality of data streams modulated using quadrature amplitude modulation in a way which provides different susceptibility to noise (section 5.2 page 10 802.11, section 17 pages 3-45, section 17.3.8.1 page 24 table 86 and section 17.3.9.7 page 29); the demodulator demodulating a QPSK signal at a first assumed amplitude level from the signal (section 17 pages 3-45, section 17.3.8.1 page 24 figure 118); the data streams demodulated by each receiver being determined according to the receiver's signal to noise ratio (section 17.2, table 78 and 91). IEEE802.11a doesn't disclose normalizing the remaining signal by subtracting the decoded phase position of the demodulated first QPSK data word from the received signal and repeating the QPSK decoding; and repeating the normalizing and QPSK decoding steps for progressively smaller assumed amplitude levels to demodulate each said further data stream. Ishio discloses normalizing the remaining signal by subtracting the decoded phase position of the demodulated first QPSK data word from the received signal and repeating the QPSK decoding; and

repeating the normalizing and QPSK decoding steps for progressively smaller assumed amplitude levels to demodulate each said further data stream (figures 1-5 column 4 lines 1-52). IEEE802.11a and Ishio are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine in the receiving circuit disclosed by IEEE802.11a with the layered modulation disclosed by Ishio. The suggestion/motivation for doing so would have been to provide a digital carrier signal demodulation circuit simple in construction yet capable of increasing the information transmission rate (Ishio column 1 lines 65-68). Therefore, it would have been obvious to combine IEEE802.11a with Ishio to obtain the invention as specified in claim 27.

As per claim 28, the IEEE802.11a discloses that the demodulator is arranged to demodulate a received signal modulated at different respective modulation levels for each data stream (section 17 pages 3-45, section 17.3.8.1 page 24 table 86). IEEE802.11a and Ishio are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine in the receiving circuit disclosed by IEEE802.11a with the layered modulation disclosed by Ishio. The suggestion/motivation for doing so would have been to provide a digital carrier signal demodulation circuit simple in construction yet capable of increasing the information transmission rate (Ishio column 1 lines 65-68). Therefore, it would have been obvious to combine IEEE802.11a with Ishio to obtain the invention as specified in claim 28.

As per claims 29, the IEEE802.11a discloses receiving a signal over the network which carries a plurality of data streams modulated at different respective modulation levels (section 17 pages 3-45, section 17.3.8.1 page 24 table 86 and figure 118 and Annex D pages 469-522 IEEE802.11 and pages 51-53 IEEE802.11a), demodulating a QPSK signal at a first assumed amplitude level from the signal (section 17 pages 3-45, section 17.3.8.1 page 24 figure 118), and (c) attempting to demodulate at least one further data stream from the signal (section 17 pages 3-45, section 17.3.8.1 page 24 figure 118); the data streams demodulated by each receiver being determined according to the receiver's signal to noise ratio (section 17.2, table 78 and 91). IEEE802.11a doesn't disclose normalizing the remaining signal by subtracting the decoded phase position of the demodulated first QPSK data word from the received signal and repeating the QPSK decoding; and repeating the normalizing and QPSK decoding steps for progressively smaller assumed amplitude levels to demodulate each said further data stream. Ishio discloses normalizing the remaining signal by subtracting the decoded phase position of the demodulated first QPSK data word from the received signal and repeating the QPSK decoding; and repeating the normalizing and QPSK decoding steps for progressively smaller assumed amplitude levels to demodulate each said further data stream (figures 1-5 column 4 lines 1-52). IEEE802.11a and Ishio are analogous art because they are from the same field of endeavor. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine in the receiving circuit disclosed by IEEE802.11a with the layered modulation disclosed by Ishio. The suggestion/motivation for doing so would have been to provide a digital

carrier signal demodulation circuit simple in construction yet capable of increasing the information transmission rate (Ishio column 1 lines 65-68). Therefore, it would have been obvious to combine IEEE802.11a with Ishio to obtain the invention as specified in claim 29.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Similar rejections can be made using Qiao ("Goodput Enhancement of IEEE 802.11a Wireless LAN via Link Adaptation", in Proc. IEEE ICC'2001, Helsinki, Finland, June 11~14, 2001); Schafer (US 6404755 B1).; and Trachewsky (US 6891881), instead of IEEE 802.11a standard (Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) Specifications, High-speed Physical Layer in the 5 GHz Band, 1999), as indicated in previous actions. Chen (US 20020181604 A1) discloses a layered modulation for digital signals similar to the system disclosed by Ishio, including non-coherent layered modulations; Chen discloses also all the limitations disclosed by Ishio used for the art rejections of the claims.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juan A. Torres whose telephone number is (571) 272-3119. The examiner can normally be reached on Monday-Friday 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2631

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Juan Alberto Torres  
01-12-2006

  
**KEVIN BURD**  
**PRIMARY EXAMINER**